DETAILED ACTION

1. This Office action is responsive to communication filed on 09/16/08. Claims 1-19 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang, et al ("SRC: Stable Rate Control for Streaming Media", Feb. 2003), hereinafter "Huang" and further in view of Ogata ("Modern Control Engineering", 2002).

4. Huang is an intervening reference. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

5. Regarding claim 1, Huang teaches an apparatus comprising:

means for obtaining an index representative of a state of a network ('plant consists of send component in the streaming server, the network and the client buffer', § 2.4.1); and

means for controlling a bit rate according to a proportional process and an integral process (Fig. 5 on p. 5) on the difference ('error e', § 2.4.1) between a target value ('reference buffer level b_0', § 2.4.1) for said index and an observed value ('feedback value b', § 2.4.1) of said index.

While Huang teaches controlling bit rate using a feedback control system, Huang fails to teach that the means for controlling includes a multiplier for multiplying an observed value of data buffered in a network by a constant value and outputting a product which is added to a product of said integral process.

Ogata teaches a control system that includes multiplying an observed value (i.e, u(t)) by a constant (i.e., D(t)) and outputting a sum (i.e., y(t)) of the product and the product of an integral process (Fig. 3-15 on p. 73). Ogata teaches that when the system is a time-invariant system, the equations simplify so that D(t) becomes D, where D is not a function of time (Equation 3-15 on p. 73). Ogata goes on to indicate that D may be a constant (p. 74, D = 0). The Supreme Court has "recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result". KSR Intern. Co. v. Teleflex Inc., 127 S.Ct. 1727, 1740 (2007). In the instant case, applicant has merely replaced the control system

disclosed in Huang with another control system that is well-known. The Office has no reason to believe that such a simple replacement would yield an unpredictable result. It would have been obvious to employ the control system of Ogata in order to produce a stable system.

6. Claims 1-7 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mascolo ("Congestion control in high-speed communication networks using the Smith principle", 1999), and further in view of Ogata.

7. Regarding claim 1, Mascolo teaches an apparatus comprising:

means for obtaining an index representative of a state of a network ('source receives the feedback…from the bottleneck', § 3.1, p. 1925); and

means for controlling a bit rate according to a proportional process and an integral process on the difference between a target value for said index and an observed value of said index (Fig. 4, formula (5), both on p. 1926).

While Mascolo teaches controlling bit rate using a feedback control system, Huang fails to teach that the means for controlling includes a multiplier for multiplying an observed value of data buffered in a network by a constant value and outputting a product which is added to a product of said integral process.

Ogata teaches a control system that includes multiplying an observed value (i.e, u(t)) by a constant (i.e., D(t)) and outputting a sum (i.e., y(t)) of the product and the product of an integral process (Fig. 3-15 on p. 73). Ogata teaches that when the

system is a time-invariant system, the equations simplify so that D(t) becomes D, where D is not a function of time (Equation 3-15 on p. 73). Ogata goes on to indicate that D may be a constant (p. 74, D = 0). The Supreme Court has "recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result". KSR Intern. Co. v. Teleflex Inc., 127 S.Ct. 1727, 1740 (2007). In the instant case, applicant has merely replaced the control system disclosed in Mascolo with another control system that is well-known. The Office has no reason to believe that such a simple replacement would yield an unpredictable result. It would have been obvious to employ the control system of Ogata in order to produce a stable system.

8. Regarding claim 2, Mascolo-Ogata teaches that the index comprises the amount of data buffered in the network ('delayed bottleneck queue level', § 3, p. 1925).

9. Regarding claim 3, Mascolo-Ogata teaches:

means for calculating a RTT over the network ('RTT_i = ...', § 3, p. 1925); and

means for calculating the amount of data buffered in the network using the RTT ('decreased by the number of cells released by the source during the last round trip time', § 4, p. 1926).

10. Regarding claims 4-7, Mascolo-Ogata does not explicitly teach the use of serial numbers in the transmission and acknowledgement of data, and calculating the amount of outstanding data in the network based on these serial numbers. Mascolo-Ogata teaches applying the proposed control law to TCP/IP. (§ 1, p. 1923). TCP/IP inherently employs such serial numbers in the transmission and acknowledgement of packets. Moreover, congestion control in TCP/IP employs these serial numbers to determine the amount of data in the network. This approach is commonly known as the "sliding window".

11. Regarding claims 16-19, Mascolo-Ogata teaches using, as a target bit rate, the sum of a value proportional to the difference between the target value for the index and the observed value of said index, and a value produced by multiplying an integral of said difference by a constant (formula (5) on p. 1926).

12. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mascolo-Ogata as applied to claims 1-4 above, and further in view of Rapsomanikis ("RABR: A Service Based on Adaptive Rate Guarantees for Real-Time Video in ABR Networks", 2000).

13. Regarding claims 8-11, Mascolo-Ogata teaches the invention substantially as claimed and described in claims 1-4 above, but fails to apply the proposed control algorithm to the streaming of real-time video.

Rapsomanikis teaches, in the same field of endeavor, a similar feedback control system for controlling the bit rate of real-time video in ABR networks (abstract).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to employ the technique taught by Mascolo-Ogata for the transmission of real-time video as suggested by Rapsomanikis in order to avoid congestion in the transmission of real-time video without underutilizing the available bandwidth of the network, and in order to achieve asymptotic stability in the transmission of real-time video.

14. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mascolo-Ogata as applied to claims 1-4 above, and further in view of U.S. Pat. No. 6,141,447 ("Linzer").

15. Regarding claims 12-15, Mascolo-Ogata teaches the invention substantially as claimed and described in claims 1-4 above, including transmitting data at a bit rate determined by a bit rate control process, but fails to teach preparing a plurality of data of audio and video signals encoded at different bit rates and transmitting said data at the determined bit rate.

Linzer teaches that video transcoders are useful for transmitting a video stream using different bitrates based on the congestion of the network. (Col. 1, lines 10-37). Linder goes on to teach that an alternative to the use of video transcoders is to store multiple copies of the same video at different bit rates. (Id.)

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JULIAN CHANG whose telephone number is (571)272-8631. The examiner can normally be reached on Monday thru Friday 9AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (571) 272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. C./
Examiner, Art Unit 2152

/Kenny S Lin/
Primary Examiner, Art Unit 2452